ANT-4000E

H.264 1080P60 HD VIDEO ENCODER

User Manual Ver. 2.0

Safety Precautions

We appreciate you purchasing the ANT-4000E.
Before installing the product, please read the following carefully.

◈ Make sure you turn off the power before installing the ANT-4000E.

◈ Do not install under the direct sunlight or in dusty areas.

◈ Make sure you use the product within the temperature and humidity specified in the specification.

◈ Do not operate the product in presence of vibration or strong magnetic fields.

◈ Do not put electrically conducting materials in the ventilation hole.

◈ Do not open the top cover of the product. It may cause a failure or electric shock from the components.

◈ To prevent the unit from overheating, make sure you keep the ventilation holes at the top least 10cm from any other object. Also allow air underneath the unit and do not obstruct vent holes

◈ Make sure the mains voltage is correct (220V/110V) before connecting the power adapter supplied in the box (12V DC output).

◈ Do not obstruct ventilation holes above and below the server box. Rubber feet are provided to allow air flow below the server case , in addition to outlet holes at the top of the case.

Table of Contents

Introduction

1. About this Manual

This User Manual provides information on operating and managing the ANT-4000E in a number of video systems. The Manual includes instructions for installation, operation and configuration of the ANT-4000E as well as troubleshooting. The ANT-4000E will be used as a generic part number and where options are mentioned this will be referred to as the ANT-4000EXX where XX is used to identify the options part number

2. Features

ANT-4000E is a Full HD 1920 x1080 at 60 frames/second encoder designed to be used for various streaming applications where high quality video or PC output needs to be sent over an IP network at low data rates. Video resolutions from PAL and NTSC up to 1080P60 are supported as well as stereo audio.In combination with the ANT-40000D Decoder unit the ANT-4000E can additionally stream video at extremely low latencies (delay) typically 30mS. The ANT-4000E provides a number of different video and audio interfaces together with a general purpose virtual 2 way serial cable interface. Network transmission is via a 10/100 ethernet port. Power is supplied by the 240/110V AC to12Volt DC converter supplied.

❑ **Video**

- State-of- the art Compression Algorithm, H.264 Baseline level 4.2
- 24 bit RGB + YUV (4:2:2)
- Low latency encode decode typ. 30mS (when used with ANT-4000D)
- Single stream + Stereo Audio
- Video and PC interfaces supported YCbCr & RGB
- HDMI v1.3 (DVI-D) VGA, Composite Video and Component video supported
- YPbPr Component plus CVBS composite video
- Compression and Decompression with multiple Resolution options
  : 1920x18080i60/P60, 1280x720P60, 720x480i60/P60
  : WSXGA + (1680 x1050), SXGA (1280x1024) WXGA(1280x800)
  XGA (1024x768) SVGA (800x600) , VGA (640x480) see table for more
- Wide Range of Video Transmission Rates : 100kbps ~ 12Mbps
- Various Transmission Modes : I frame GOP mode, Slice Mode (I frame in P frames)
- HDCP compliant v1.1

❑ **Audio**

- **2x** HDMI audio supported - Compressed or uncompressed
- Stereo Audio one way 44.1kHz / 48kHz , 16 bit ADC.
- RCA stereo jacks and mini stereo headphone jacks

❑ **Network**

- Static IP & Dynamic IP (DHCP) Support 10/100 ethernet
- One to One Connection & One to Multiple Connection
- Multi-Casting and Simulcast modes
- Various Protocols supported : TCP/IP, UDP, Multicast, DHCP, HTTP, RTSP,
- RTSP , One to one proprietary low latency plus MPEG-TS (Video only)
- PLC modem connection

❑ **Serial Data**

- Two serial ports : RX and TX bi directional data
- 3.3v TTL serial data (external level shift for RS232 required)
- Data pass-through mode : Serial data communication between Encoder - Decoder
- Virtual serial cable between encoder and decoder, Bi Directional.

❑ **USB**

- Engineering applications only

❑ **User Interface**

- Internet Explorer for system setup
- Firmware upgrade via PC command interface (simple)
- OSD system status if required

❑ **Operating conditions**

- 0 to +40 ambient operating temp

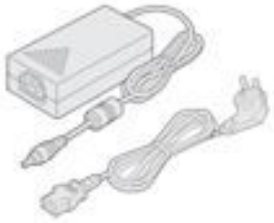
❑ **Reliability** Reliable embedded system

- System recovery utilizing dual watch-dog functions
- System reset switch

3. Contents of Box

ANT-4000E

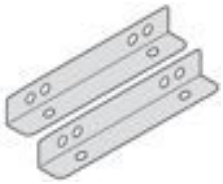
User Manual (CD)



Power adapter and Cable

Software CD

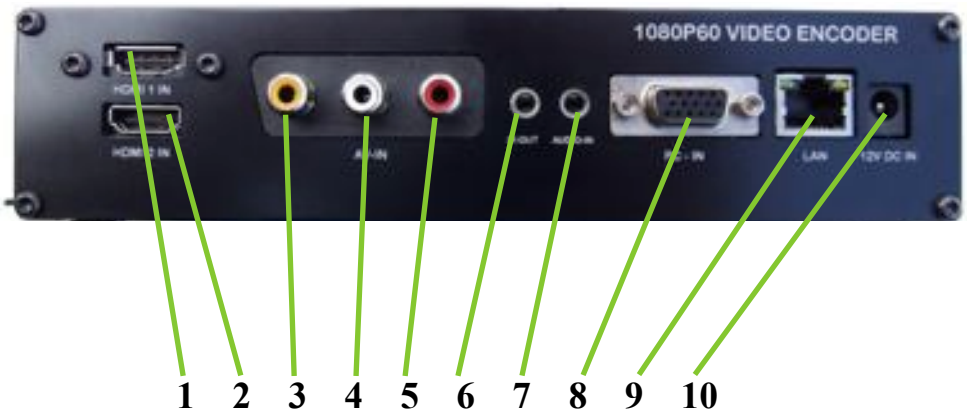
S c r e w s (fitted)



B r a c k e t s (fitted)

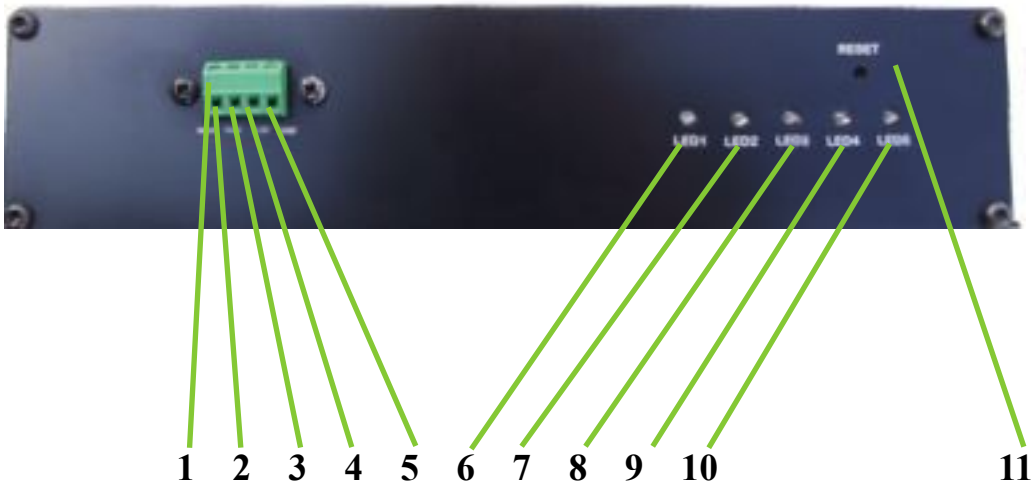
4. Panel Layout

❑ **Front View**



No.	Parts	Function
1	HDMI 1	HDMI input number 1
2	HDMI 2	HDMI input number 2
3	CVBS Video	Composite Video Input RCA
4	Audio L	Audio input left
5	Audio R	Audio input Right
6	IR Out	Not used
7	Audio Jack	Stereo audio input jack
8	PC-IN	VGA input for PC interface
9	LAN	10/100 LAN RJ45 interface
10	12V DC	12 Volt DC input

❑ **Rear View**



No.	Part	Function
1	Serial	Two way serial connector
2	Rx	Serial Data Rx output
3	Tx	Serial Data Tx input
4	3.3V	3.3 volts DC out
5	Ground	Ground
6	LED1	Power indicator LED1=On= 12v Power On
7	LED2	System booting (blinking), Booted (On)
8	LED3	Connected to Client On=Decoder Blink=IE
9	LED4	Video streaming On=Video streaming
10	LED5	selected video port has a valid input signal
11	Reset switch	System reset to factory default/ IP address

5.Quick Start Guide

The ANT-4000E is a high quality 1080P60 maximum video and audio encoder with virtual serial connections. ANT-4000E compresses Video and Audio using H264 standards and streams this compressed signal over an IP network via Ethernet. Using an ANT-4000D decoder unit will allow the IP network stream to be decoded and converted back to Video plus Audio. Alternatively a Software decoder such as VLC player may be used to decode the IP network stream generated by the ANT-4000E

❑ Quick Start - Power up and streaming video

The ANT-4000E comes with a 12 volt power converter (220/240/110V AC to 12 VDC) plus a kettle lead for connection to the mains supply. Plug the Kettle lead into the 12 volt supply and the other end of the kettle lead into the local mains AC supply.

Remove the ANT-4000E from its packaging and connect the 12Volt DC plug into the 12 socket of the ANT-4000E. 5x LEDs will illuminate then gradually change state as the unit boots into its standby/ ready condition. (See LED description for exact meaning of LEDs)

Connect a suitable video source via one of the external Video and Audio inputs provided on the ANT-4000E. Video resolution can be from PAL NTSC up to 1920 x1080 at 60 Hz or frames/second. A full list of supported video formats is described later in this manual. (HDMI , CVBS, VGA and Component (using a Component to VGA dongle) . DVI-D may be connected using a DVI-D to HDMI dongle.

If you are using an ANT-4000D decoder unit connect this in a similar way as described above except Video and Audio connections will be Outputs instead of inputs .

ANT-4000E + ANT4000D are shipped with the following defaults:

- Encoder will communicate / stream to the Decoder via LAN

- HDMI Port 1 (upper most input) on ANT-4000E is input and HDMI output on ANT-4000D

- IP addresses are 192.168.0.151 (E) and 192.168.0.152 (D)

- Connection via LAN will allow video from the ANT-4000E to be streamed to the ANT-4000D without any changes being made to the settings. Customers with both units should test this configuration first. This is the low latency mode proprietary mode.

❑ Quick Start- Connecting a web browser to adjust/ change settings.

The ANT-4000E/D has a web interface for setting up all parameters , network functions etc. Currently you must use Internet Explorer for this function.

Having connected the ANT-4000E to a video/audio source and 12vDC next connect the ethernet port to an ethernet network/ switch using an RJ45 ethernet cable (not supplied).

Connect a laptop or PC to the same network that the ANT-4000E is connected to.

ANT-4000E Factory default IP address is 192.168.0.151 (ANT-4000D is 192.168.0.152)

❑ **Quick Start- Streaming video to VLC player/ Set Top Box.**

The ANT-4000E can be set to stream video to a software decoder such as VLC player. There are two modes supported :

a) RTSP video plus Audio

b) MPEG-TS mode Video Only!

Top test Software decoding using VLC player please follow these instructions:

1) Browse to the ANT-4000E IP address using Internet Explorer. Active X is used to control and change settings so your browser may ask if it is safe to install Active X control.

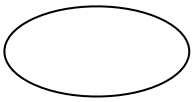
2) On the Streaming Control page select the RTSP SERVER pull down menu and select ON. Then press SUBMIT to save these setting changes to RAM

3) If you wish to save this configuration to FLASH memory so that after next power up these settings will be default, go to SAVE SETTINGS and click SAVE then confirm.

4) Open VLC player and in Network type : **rtsp:192.168.0.151:8054/stream**

5) VLC will now decode the incoming rtsp stream from the ANT-4000E

More details on setting up VLC player and using MPEG-TS are explained in more detail further on in this manual.



INSTALLATION

6. Installation- Connecting Video & Audio

❑ **Encoder System**

- **Connecting Video**
  The ANT-4000E has multiple inputs which can be used to input video
  - **HDMI 1 and HDMI 2**: These inputs support video plus audio but must be selected in the Web Setup (See System Configuration)
  - **Composite CVBS:** Composite video input in the form of an RCA socket (Yellow) together with Audio Left and Right RCA sockets (White and Red)
  - **VGA D-Sub**: Supports VGA analogue inputs from a PC , audio is input separately via the stereo Jack socket or RCA socket above.
  - **DVI-D**: Supported via one of the HDMI inputs using an external DVI to HDMI dongle (not supplied)
  - **Component Video**: Supported via the VGA input using an external Component Video to VGA converter dongle. Supplied as an option

6. Installation- Connecting Audio

- **Connecting Audio.**
  The ANT-4000E has two methods to connect Audio
  - Via the stereo 3.5mm Jack socket
  - Via the RCA stereo left and right input sockets
- Audio signal is at line level, therefore, a microphone or speaker with an amplification function should be used

6. Installation- Connecting Network & Serial Ports

- **Connecting the Network Cable**
  The ANT-4000E has a 10/100 RJ45 Ethernet port for connection to a network or external wireless device
- **Connecting the Serial Ports**
  The ANT-4000E has a two way serial connection capability via a “Virtual Cable” function. This

allows two way serial data to be sent/received if the ANT-4000E is paired up with an ANT-4000D decoder unit. 3.3V data may be sent bi-directionally for control and command applications. Serial data is sent as is subject to the serial port configurations (See System setup- Serial Ports)

- Serial Data Tx
- Serail Data Rx
- +3.3V DC
- Earth

6. Installation- Powering Up & LED Status

Connect the 12V power converter to 110/240 V AC supply with the power lead provided.
Connect the 12V connector into the front panel of the ANT-4000E marked 12V DC Input.

1) Observe ALL LEDs are illuminated and flashing momentarily, this is to check all LEDs are working

2) LED1: This indicates if 12V DC power is connected
   ON= Power On, OFF =Power OFF, Flashing= test mode on power up

3) LED2 : Booting Status of the onboard CPU
   Flashing= Booting , On= Booted (LED3/4/5 will flash)

4) LED3: Client Connected
   Flashing: No Client connected (decoder) , On= Client decoder Connected

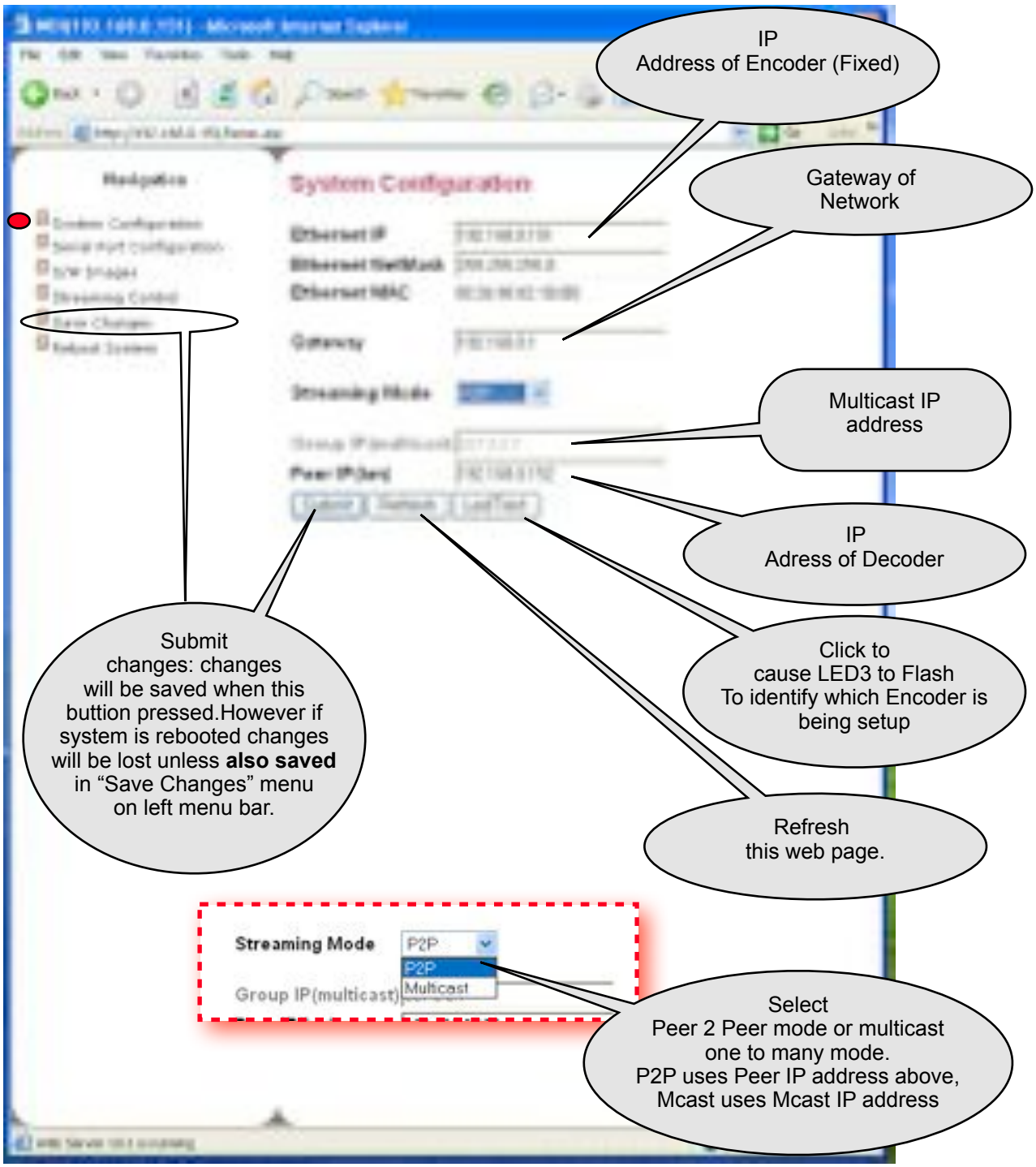
5) LED4: Video Stream Data:
   On= Video data is streaming, Flashing = Streaming is Off.

6) LED5: Video Input Connected
   On= Video is connected to the selected input and identified as valid ,flashing= No Video

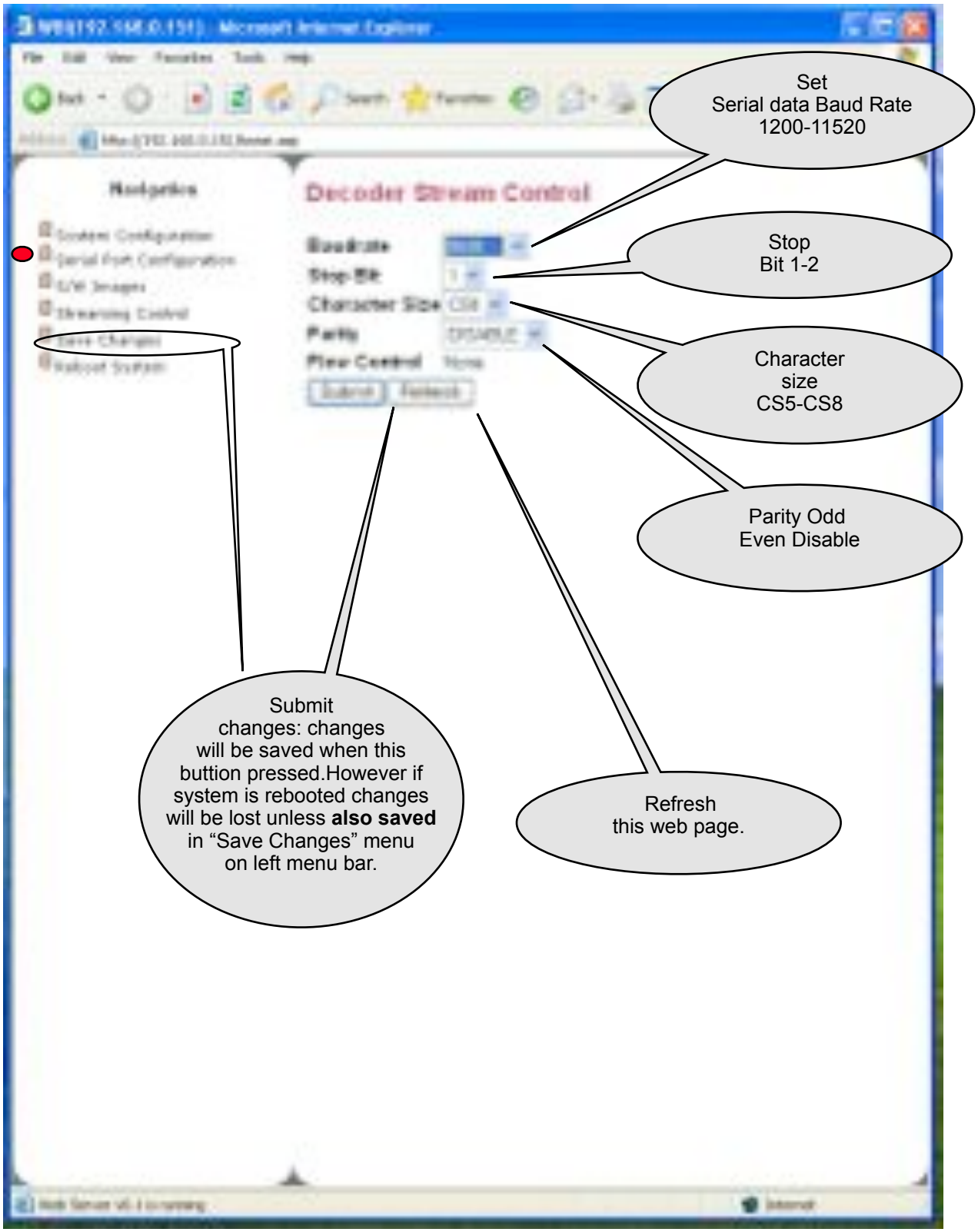
If the Encoder is working correctly in a typical system and connected to decoder and is streaming video then ALL LEDs will be ON.

Web Based System Setup

7. System Configuration



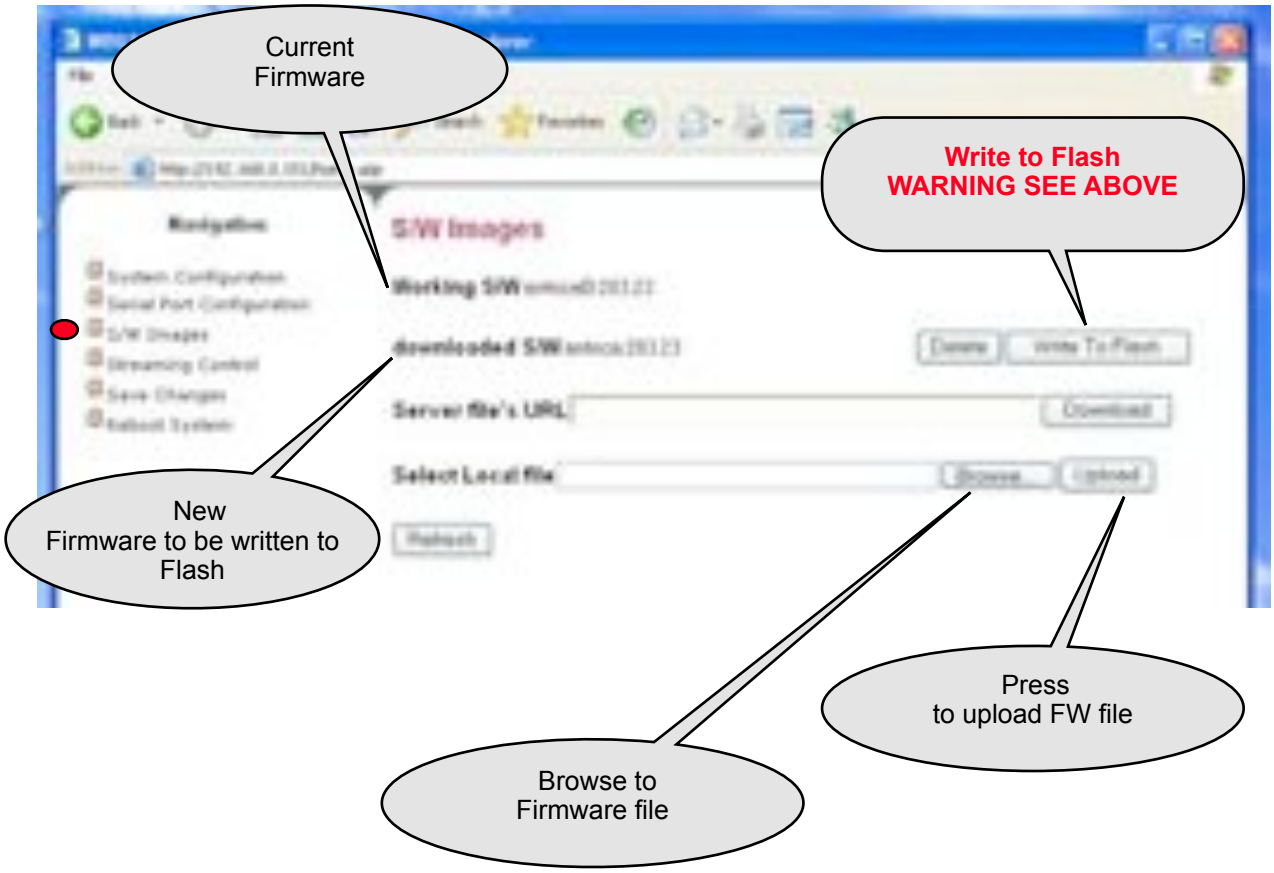
7. Serial Port Configuration



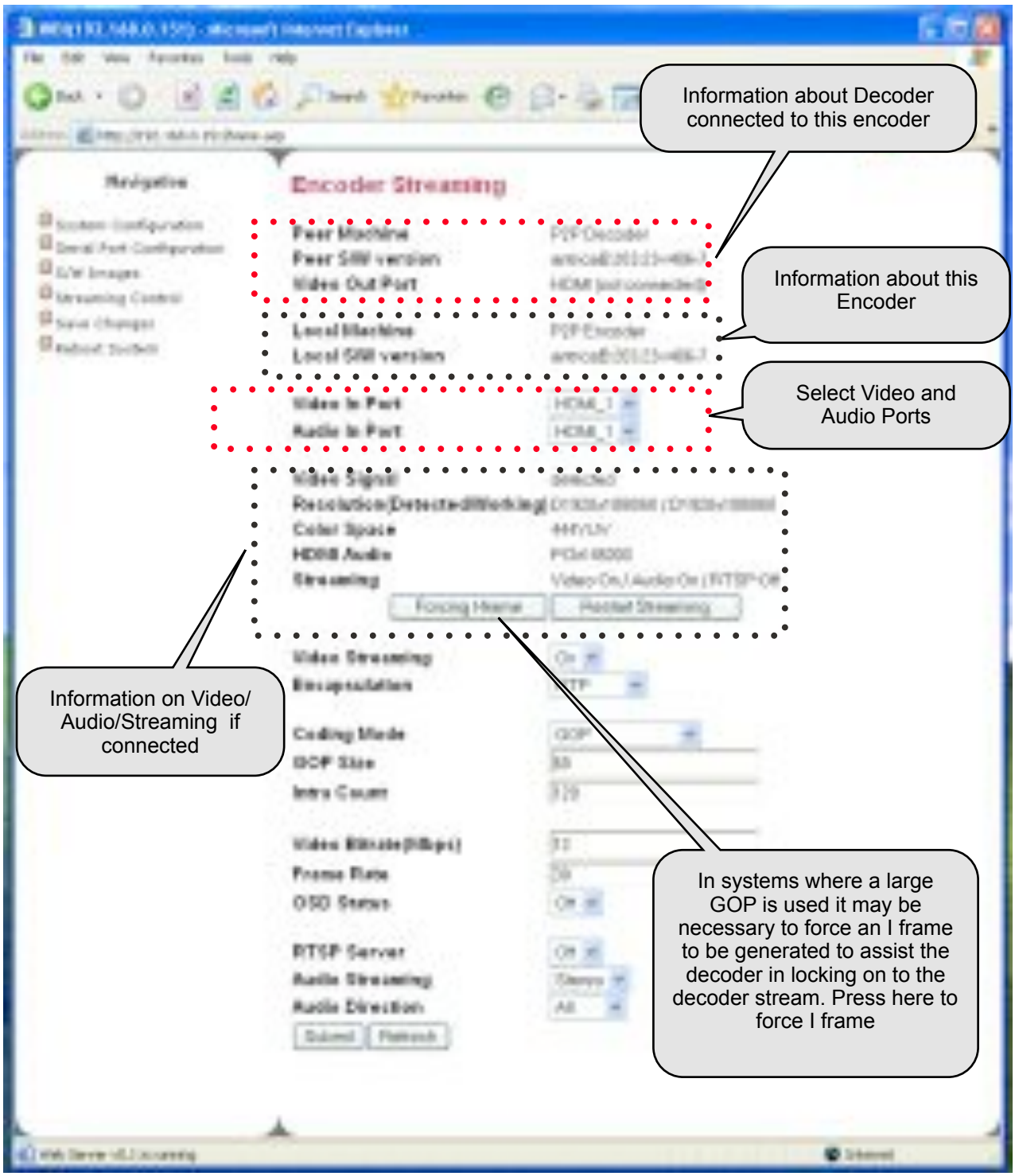
7. S/W Images

This section allows users to easily upgrade the Firmware of the ANT-4000E

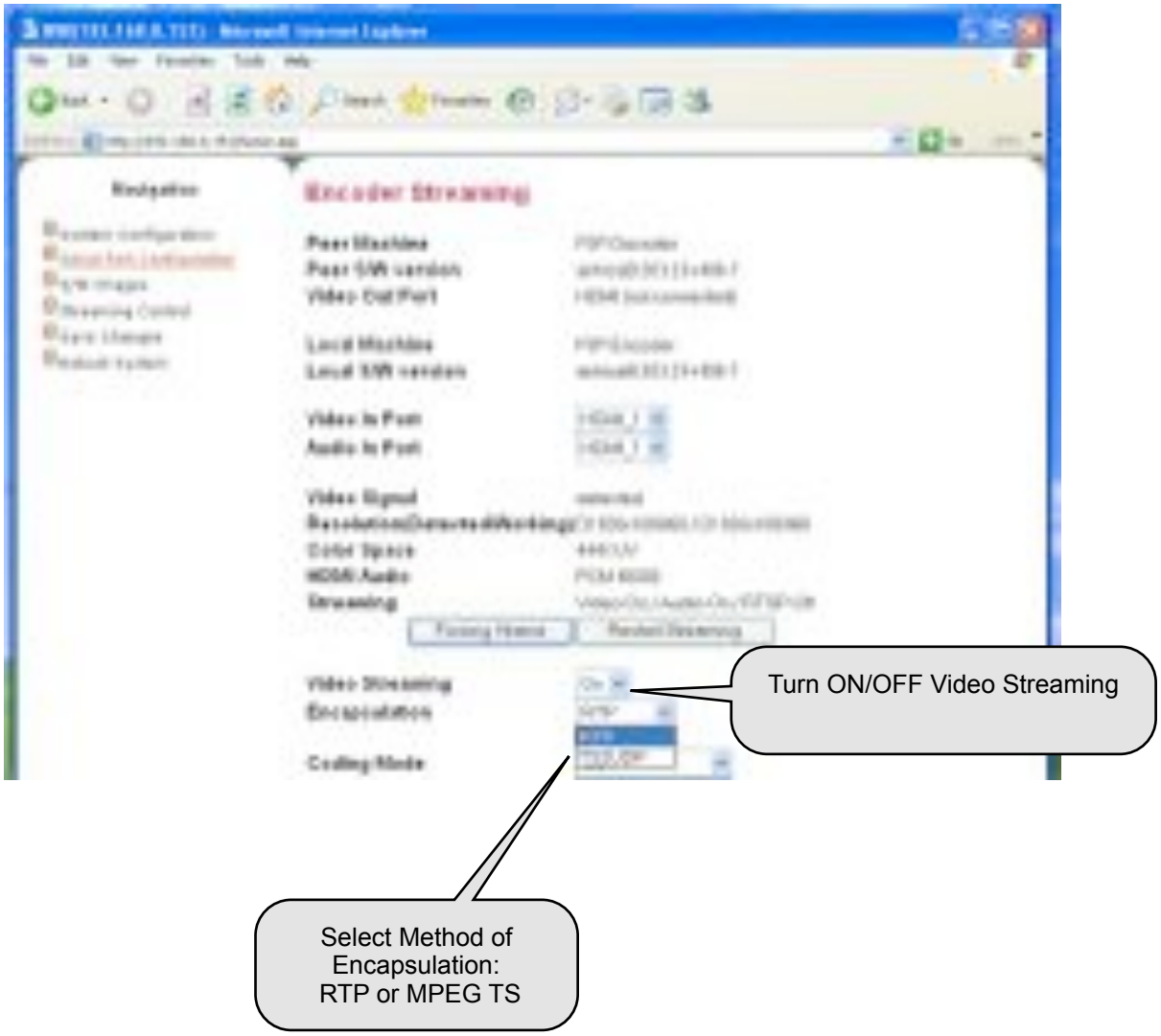
- To upgrade the firmware use the Browse button below to locate the new Firmware file on your computer
- Once the F/W file is selected click UPLOAD. This will cause the ANT-4000E to upload the file into temporary memory. This may take several seconds
- Once the UPLOAD process is finished the web page will show a WRITE TO FLASH box as shown below.
- Pressing WRITE TO FLASH will cause the ANT-4000E to save the file to its Flash memory. **WARNING! Once you press this button do not unplug the power lead as this may cause the system to be corrupted and may not recover or function correctly. Make sure the Firmware file is correct before pressing UPLOAD TO FLASH.**
- **Once UPLOAD TO FLASH is pressed the system will take several minutes to write the file to Flash and then reboot. Do NOT UNPLUG the system at this time or make any further changes until it has rebooted fully (All LEDs illuminated and as a minimum LED1 and LED2 illuminated permanently if video is not connected or a decoder is not connected) Allow 5 minutes for this take place.**


Current Firmware
Write to Flash WARNING SEE ABOVE
S/W Images
New Firmware to be written to Flash
Press to upload FW file
Browse to Firmware file

7. Streaming Control (1) - Information Screen


Information about Decoder connected to this encoder
Information about this Encoder
Select Video and Audio Ports
Information on Video/ Audio/Streaming if connected
In systems where a large GOP is used it may be necessary to force an I frame to be generated to assist the decoder in locking on to the decoder stream. Press here to force I frame
Navigation
Encoder Streaming

7. Streaming Control (2)- Video Encapsulation/ Streaming



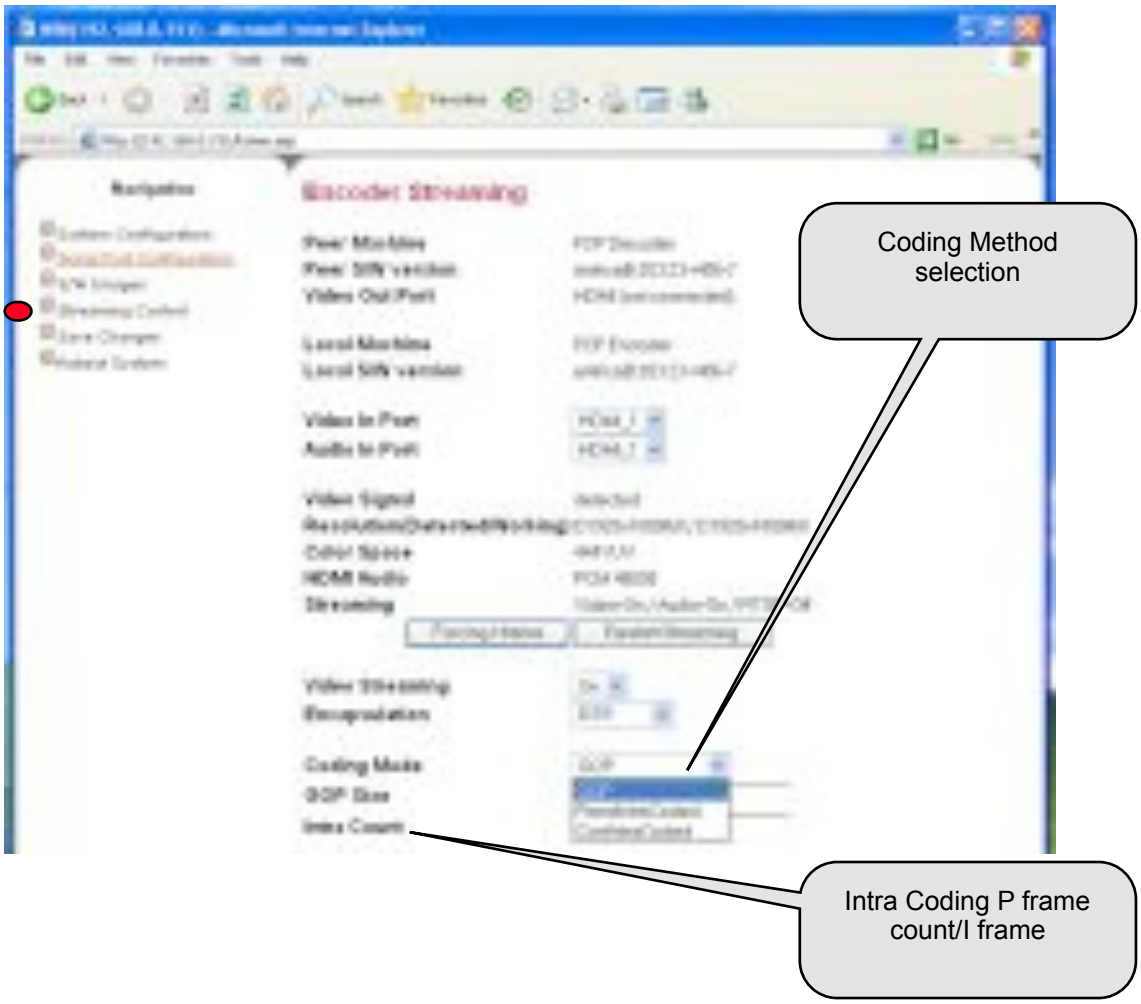
ANT-4000E has 2 modes of Video encapsulation:

- RTP mode is used when the RTSP server is enabled and the ANT-4000E streams to an RTSP software or hardware decoder or when ANT-4000E is used in low latency P2P mode with an ANT-4000D decoder.. Note: The ANT-4000D may also decode RTSP mode but ultra low latency is not supported. P2P mode is default if the RTSP server is turned OFF.
- MPEG-TS mode is used when the ANT-4000E is streaming via UDP to a set top box or soft decoder capable of decoding MPEG Transport Stream (H264 only) . Note Audio is currently not supported in this mode.

7. Streaming Control (2)- GOP and Intra Modes

ANT-4000E supports two modes of sending the I frame:

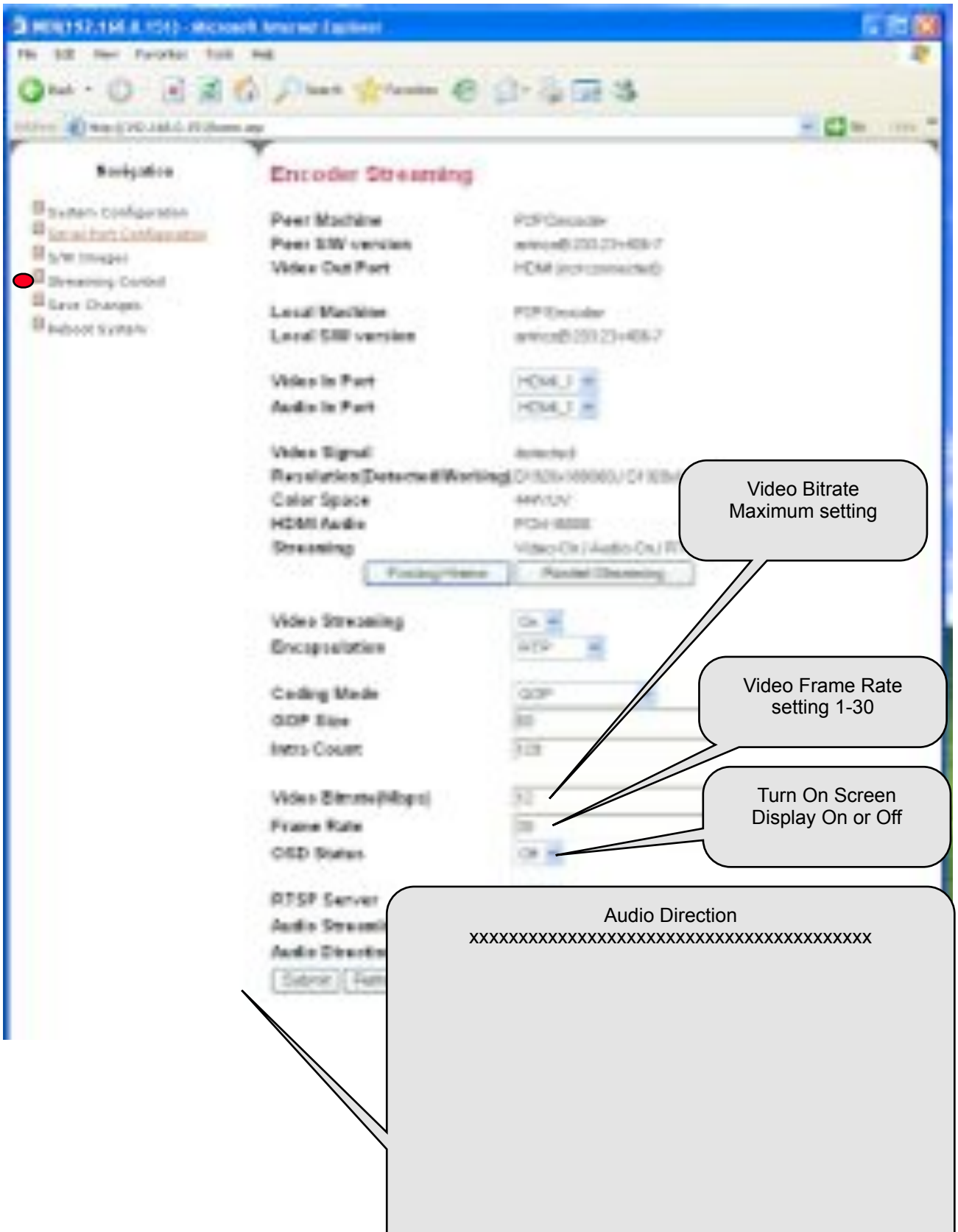
- I and P frames sent separately. This is referred to as GOP mode (Group Of Pictures). An I frame or reference frame is generated followed by a number of P frames (Predictive) determined by the GOP SIZE setting (e.g GOP=60 is 1x I frame followed by 60 P frames)
- RandIntraCoded and ContIntraCoded are similar methods of “Slice” encoding where the I frame data is broken into pieces and sent together with the P frames. A traditional I frame is generated when a new client joins in or at the start of a transmission.
- Contiguous Intra Coded (ContIntraCoded) is where the top left macroblock of an I frame is sent with the first P frame. The next Macroblock of the I frame is sent with second P frame and so on . Last macroblock is bottom right.
- Random Intra Coded (RandIntraCoded) is where macroblocks of the I frame are randomly selected and sent embedded in P frames.
- Intra Count defines the period over which I frames are dispersed over P frames, simply number of P frames to each I frame.



7. Streaming Control (2)- Video Bitrate, Framerate & Audio

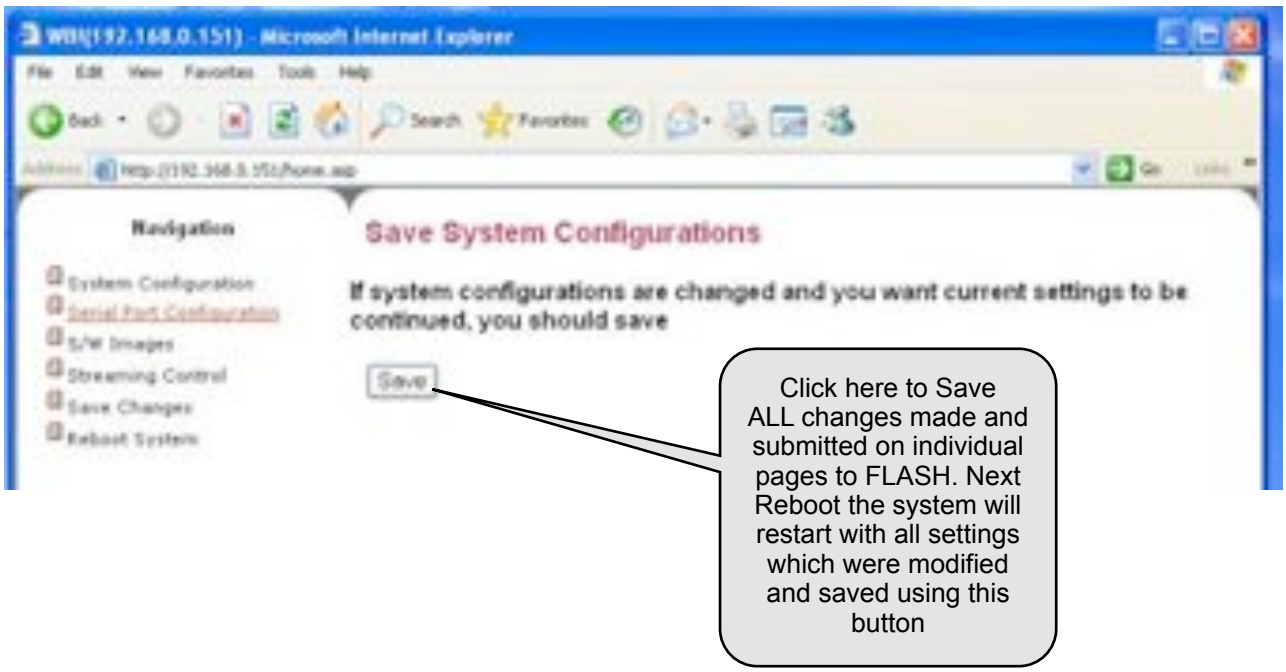
●Video maximum bitrate framerate and On Screen Display can be set using these settings. Very low bitrates for certain fast action video sequences or higher resolutions may cause blocking / artifacts.

●RTSP streaming can be turned ON or OFF , when OFF P2P mode is enabled to ANT-4000D Decoder.



8. Save Changes

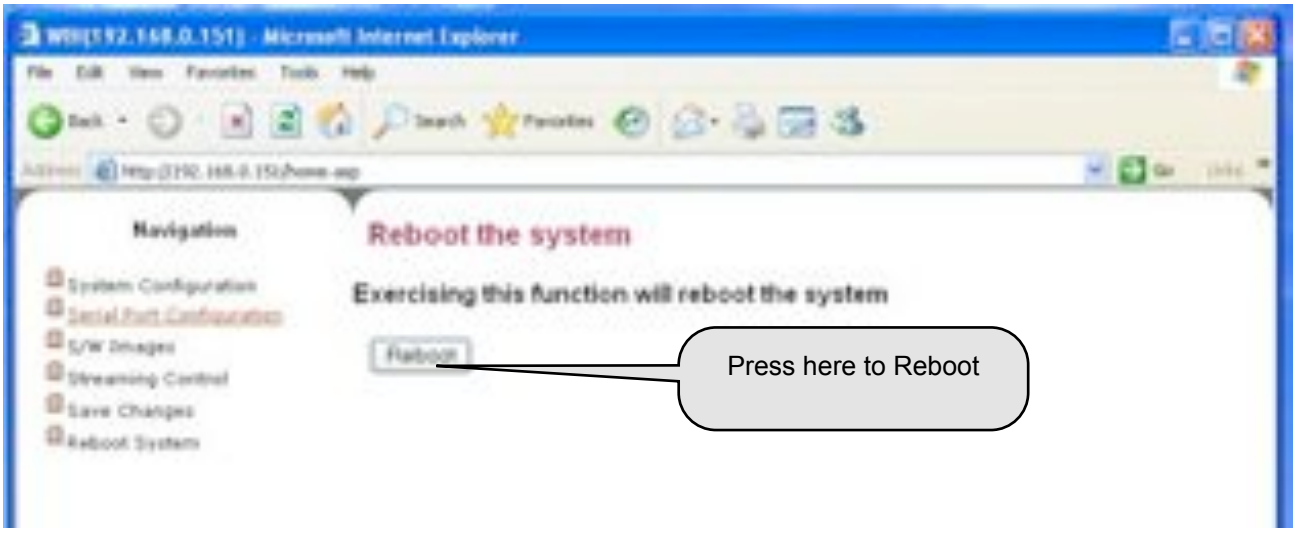
On each Setup page there is a button called SUBMIT . This causes the changes on that page to be enabled. However if the system is rebooted these changes will be lost. To write the changes on ALL pages into the system FLASH memory go to this page and click SAVE


Navigation
System Configuration
Serial Port Configuration
S/W Images
Streaming Control
Save Changes
Reboot System
Save System Configurations
If system configurations are changed and you want current settings to be continued, you should save
Save
Click here to Save ALL changes made and submitted on individual pages to FLASH. Next Reboot the system will restart with all settings which were modified and saved using this button

9. Reboot System & Factory Reset

❑ **Reboot**

Simply this is a Soft Reboot of the system which saves unplugging the 12 volt power cord. This is useful if a remote reboot is required



- **FACTORY RESET**
  To restore the Encoder to Factory default settings and factory IP address **192.168.0.151**
  HDMI 1 input is default on factory reset

Instructions

Depower the encoder- unplug 12 volt lead

Using paper clip press and hold the reset button on the panel

Power Up continuing to hold reset button

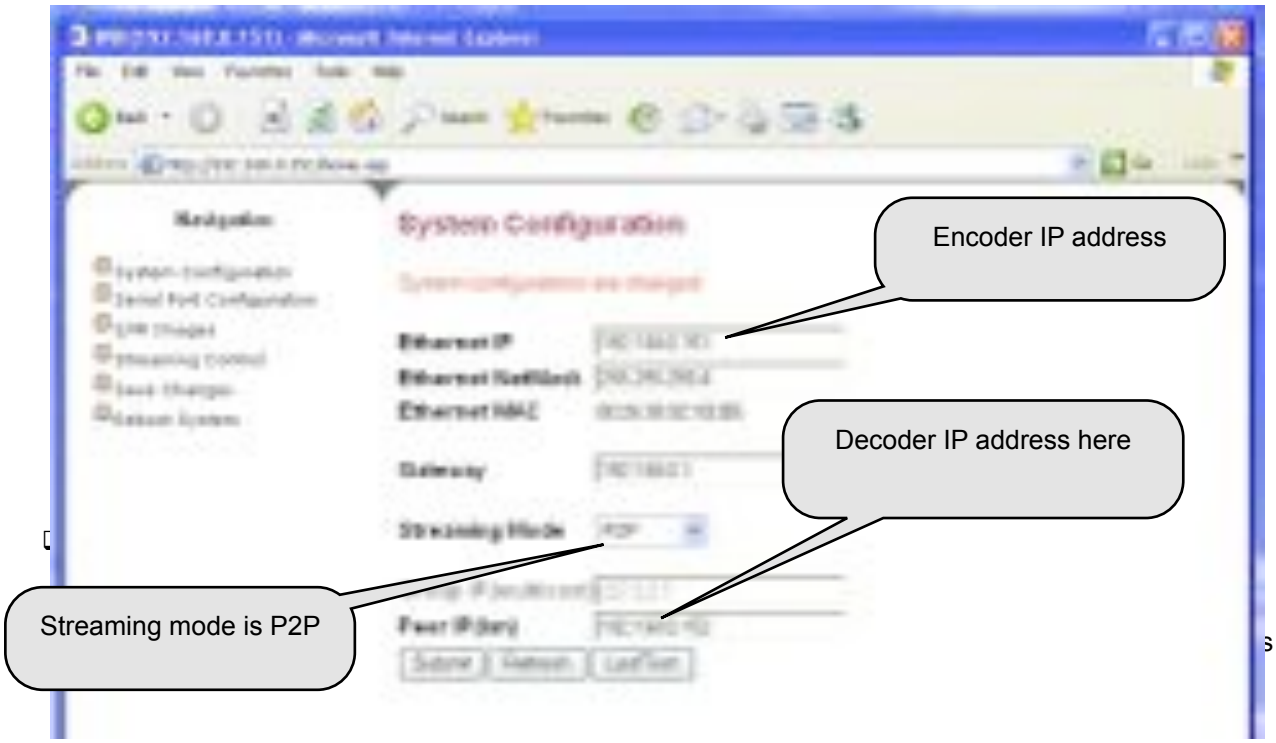
Hold for 6 seconds after power up

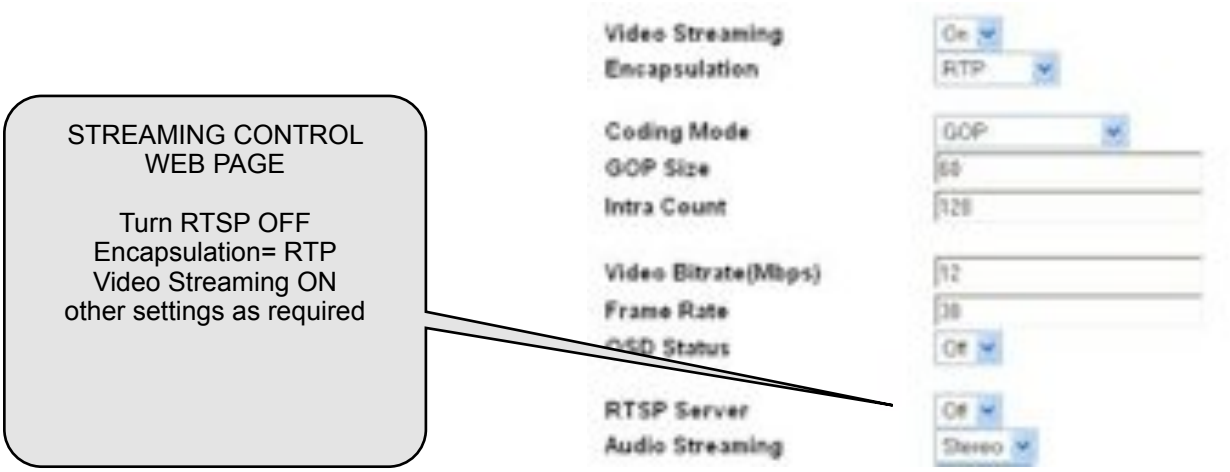
All settings are now restored to Factory Default

10 Using P2P Low Latency Mode with ANT-4000D

Connect ANT-4000E plus ANT-4000D to a network

Configure the Decoder with the Encoders IP address and Encoder with Decoders IP address in the PEER IP section of System Setup
The example below shows the encoder System Configuration page with the IP address of the Decoder in PEER IP (LAN)





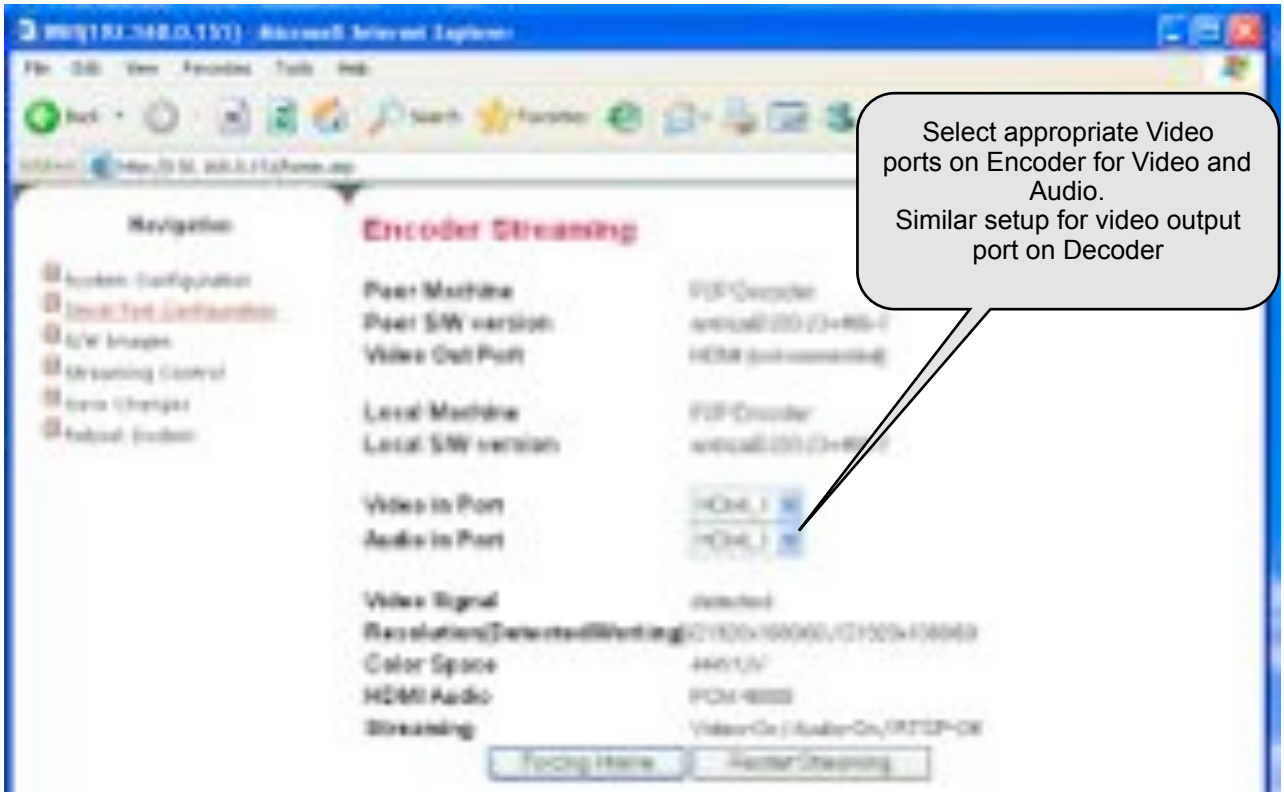
10 Using P2P Low Latency Mode with ANT-4000D

Select the correct Video Input and Output ports on the ANT-4000E and ANT-4000D

In all cases make sure you save the setting changes by clicking SUBMIT on each web page and then on completion SAVE CHANGES on the save changes web page.

The Encoder will now stream Video to the Decoder which will display the decoded video on a suitable monitor or TV.

If the Encoder is streaming correctly all 5 LEDs will be solidly lit. On the Decoder all 4 LEDs will be solidly lit (LED5 not used on the Decoder)

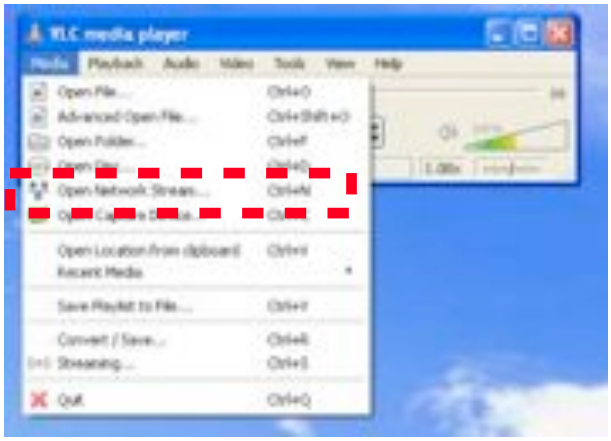

Select appropriate Video ports on Encoder for Video and Audio.
Similar setup for video output port on Decoder
Encoder Streaming

10 Using VLC player as a video Decoder

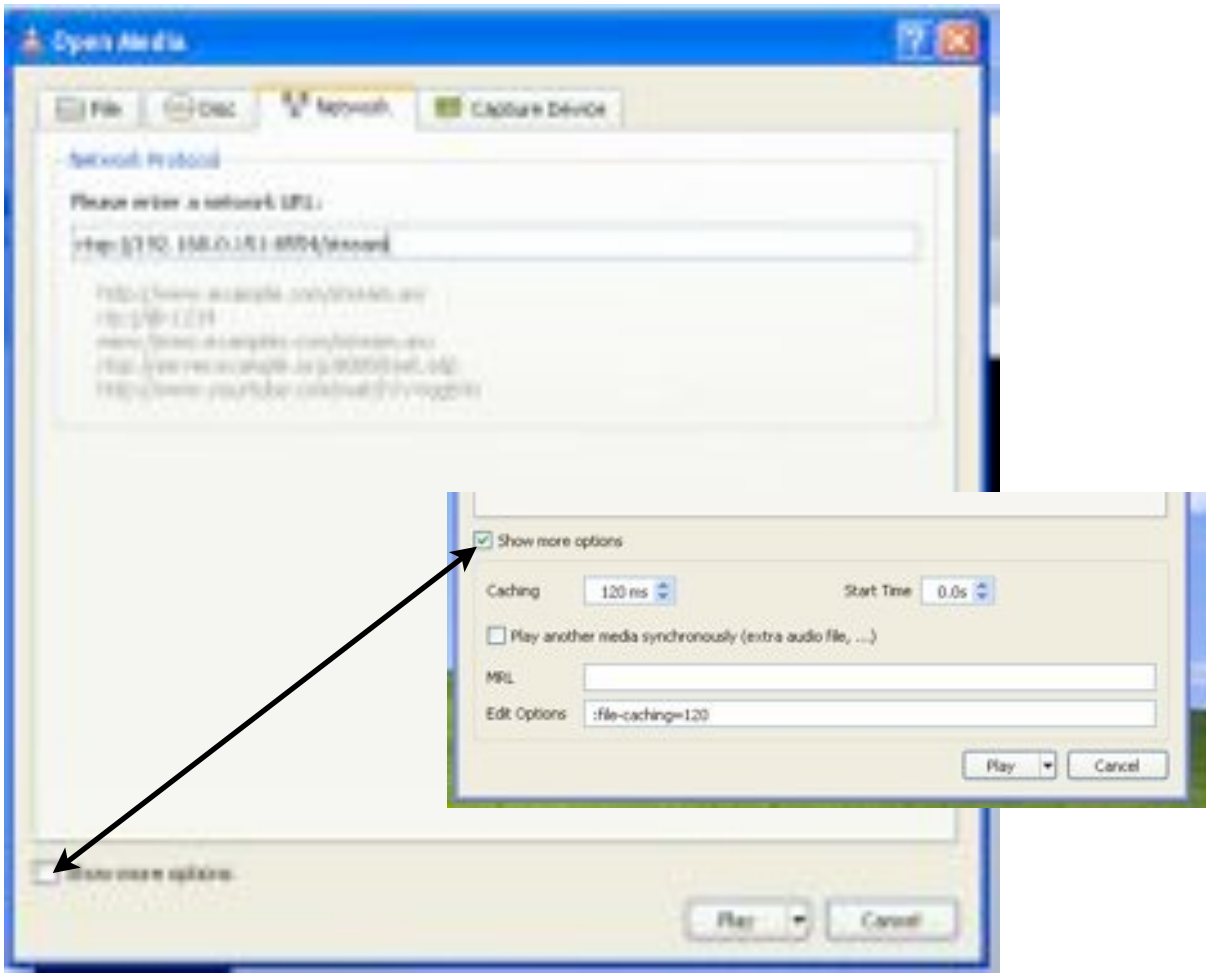
❑ VLC Setup

VLC player can be used as a decoder in both RTSP and MPEG-TS modes. RTSP supports full AAC audio plus video whilst MPEG-TS only supports video.

Open VLC Player and click MEDIA the OPEN NETWORK STREAM. This will open the window shown below. Type rtsp://192.168.0.151:8554/ stream into the the “Please enter a network URL” box



By checking the Show more options box in the bottom left corner you will have the option to increase or decrease the video buffer size (cache). Smaller buffer/cache = lower latency but possible jitter in video under certain network conditions. We suggest 120mS as a starting point

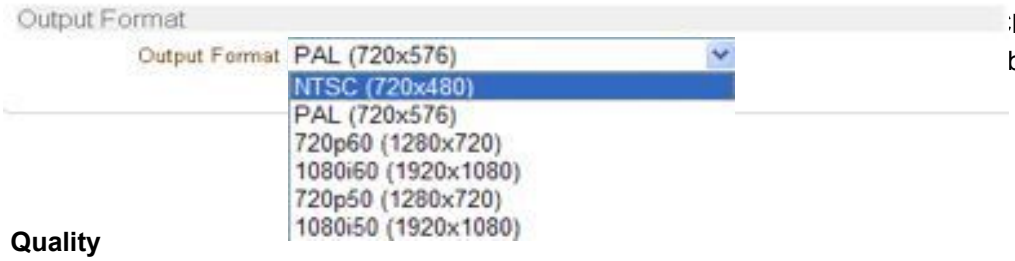


- **Resolution**
  Select video compression resolution. Compression resolutions are different depending on input formats. **The scaling** option is used when compression resolution is different from input compression. Without **the scaling** option, the input video image will be cut according to compression resolution. On the other hand, if **scaling** is selected, the input video size will be adjusted to the compression resolution.

- **Frame rate**

  Determine the maximum number of frames per second for the video images to be compressed. The frame rate of actually transmitted video can be affected by a network bandwidth limitation

- **Preference**

  Preference for video compression and transmission: With 'Bit rate' selected, the video compression will be affected by the 'Bit rate' value entered. With 'Quality' selected, the video compression will be effected by the quality of image selected. Therefore, 'Bit rate' and 'Quality' 

  BR will try bit rate will

- **Quality**

  Select Video quality. 8 levels of quality are available.

  Quality mode (VBR encoding) adjusts the bit rate according to the image complexity, using higher bandwidth for increased activity in the video and lower bandwidth for decreased activity. It is preferred when the activity changes in the video are significant or the network capacity is insufficient to maintain certain bit rates continually.

- **Bit rate**

  Determine bit rate value between 32 ~ 8000kbps.
  Bit rate mode (CBR encoding) allows you to set a fixed target bit rate that consumes a predictable amount of bandwidth.

- **I-Frame Interval**

Possible values between 0 and 255. There will be no I-frames if 0 is selected.

- **H.264 Profile**

  Select H.264 Profile: High Profile or Baseline Profile

  The standard defines various sets of capabilities, which are referred to as profiles, targeting specific classes of applications.

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  - **Ba**

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❑ **Dual Encode**

- **Use Dual Encode**

  1. Select **Off** button on the **Enable Preview** to **Enable use of Dual Encode**
  2. Select **ON** to dissable use of Dual Encoding

  The secondary video can be viewed on **Live View** window by selecting **Secondary** on **Video selection**

- **Dual Compression Algorithm**

  Select Secondary Video compression between H.264 and MJPEG. Maximum resolution is 720 x 480. There are 8steps for adjusting this mode. If MJPEG is selected, only Quality mode is supported

❑ **Motion Detection**

- **Use Motion Detection**

  Select Motion Detection function

- **Motion Detection Area Editing**

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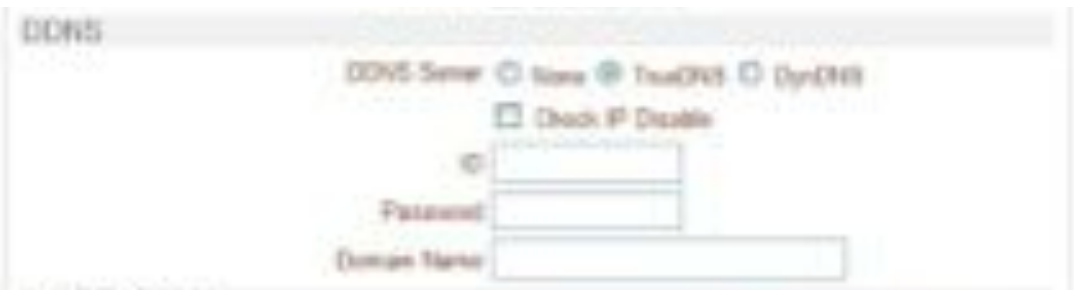
- **Output Format**

  Output Format menu appears only when **Enable Preview is on**



Select the output format for the monitor preview according to the video Input and monitor specification.

- The following output format is available according to the video input format

Output format	Available Input format
NTSC (720x480)	Composite NTSC, SD-SDI NTSC, HDMI
PAL (720x576)	Composite PAL, SD-SDI PAL, HDMI
720p60 (1280x720)	Composite, HD-SDI, HDMI
1080i60 (1920x1080)	Composite, HD-SDI, HDMI
720p50 (1280x720)	Composite, HD-SDI, HDMI
1080i50 (1920x1080)	Composite, HD-SDI, HDMI

3. Audio Configuration

❑ **Algorithm**

- Select audio algorithm between G.711 and AAC.
- **Domain Name System** (**DNS**) is a database system that translates a computer's fully qualified domain name into an IP address. Networked computers use IP addresses to locate and connect to each other, but IP addresses can be difficult for people to remember. For example, on the web, it's much easier to remember the domain name www.amazon.com than it is to remember its corresponding IP address (207.171.166.48). Each organization that maintains a computer network will have at least one server handling DNS queries. That server, called a name server, will hold a list of all the IP addresses within its network, plus a cache of IP addresses for recently accessed computers outside the network.

The sampling rate is fixed to 32KHz when AAC is selected.

Note that when ANT-4000E is connected to a decoder, the decoder's audio algorithm should be set identically to transmit audio settings.

❑ **Mode**

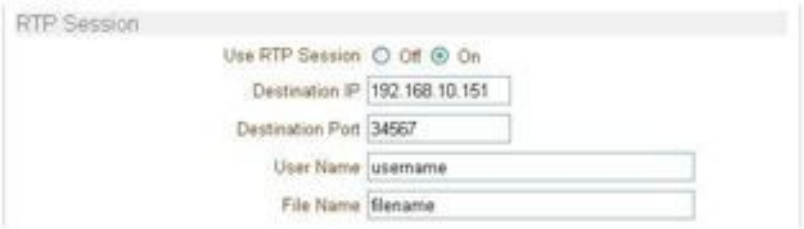
- Select audio operation mode

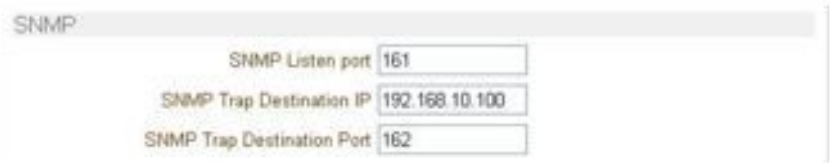
Mode	Action
Off	No operation
Tx-Only	Transmit only
Rx-Only	Receive only
Tx & Rx	Transmit and Receive

❑ **Input Gain**

- Set audio input gain

4. Network Configuration





Simple Network Management Protocol (SNMP) is used by network management systems to communicate with network elements. SNMP lets TCP/IP-based network management clients use a TCP/IP-based internetwork to exchange information about the configuration and status of nodes. SNMP can also generate trap messages used to report significant TCP/IP events asynchronously to interested clients. For example, a router could send a message if one of its redundant power supplies fails or a printer could send an SNMP trap when it is out of paper

❑ **Local**

- **IP mode**

  Two IP modes are supported. Depending on the selected mode, further configuration items come as follows

IP Mode	Selection	Description
Fixed IP	Local IP	Fixed IP address
	Local Gateway	Gateway IP address
	Local Subnet	Subnet mask

DHCP	N/A	

Dynamic DNS is a method, protocol, or network service that provides the capability for a networked device, such as a router or computer system using the Internet Protocol Suite, to notify a domain name server to change, in real time (ad-hoc) the active DNS configuration of its configured hostnames, addresses or other information stored in DNS.

❑ **DNS**

- **(**

Get DNS server address automatically when IP mode is DHCP.

- Use the following DNS server addresses

  Enter the DNS server IP address.

  - Primary DNS server
  - Secondary DNS server

❑ **Port**

- **Base Port**

  Network base port is used for communication between systems. In order for the servers and remote systems to be connected together, the port number must be set identically .

- **HT**

  HT

- **RT**

  En 64

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  str

❑ **Authenti**

- **RT**

  If F correct user ID

and password when any RTSP client is connected.

- **HTTP API Authentication**

  When **HTTP API authentication** set to **ON**, HTTP Authentication is requested for all clients which use HTTP API .

❑ **RTP Session**

- **RTP (Real-Time Transport Protocol**) is an Internet protocol used for transmitting single real-time multimedia data such as audio and video to a select group of connected clients. Normally RTSP uses RTP to format packets of multimedia content. The **RTP Session** menu is used when using RTP only streaming ,without RTSP connection. An RTP stream will be transmitted to the destination IP and Port set. The SDP (Session Description Protocol) file can be found in the server, and a client can retrieve it using an http connection.

  Related settings are as following.

  - **Destination IP** : Set the IP Address for your destination system which will receive the RTP stream
  - **Destination Port** : Set the Port for your destination system which will receive the RTP stream
  - **User Name**: Enter the User name that will be used as session name in the SDP file.
  - **File Name**: Enter the file name that will be used as the name of the SDP file. Then, it can be accessed through http://ServerAddress/filename

❑ **SNMP**

- ANT-4000E can be used as an SNMP agent. It is compatible to both SNMPv1 and SNMPvec. Settings for using SNMP (Simple Network Management Protocol) are as following
  - **SNMP Listen Port:** The port is for connecting external devices when the system operates as an SNMP client. SNMP is not used by setting a 0 value.
  - **SNMP Trap Destination IP**: Set the SNMP Trap Destination IP.
  - **SNMP Trap Destination Port:** Set the SNMP Trap Destination Port. SNMP is not used by setting a 0 value.

❑ **Multicast**

- **Multicast IP**

  The multicast IP address selection range is between 224.0.1.0 and 238.255.255.255. The selection can be used only when media protocol is set to Multicast. The Multicast menu is used for the Multicast connection request from a decoder or VMS / NVR software to transmit Multicast stream to the decoder or VMS / NVR software. The multicast address must be the same for the system to be connected using the multicast protocol.

❑ **DDNS**

Select the DDNS (Dynamic DNS) server to use. One of two servers can be selected.

- **True DNS:** TrueDNS service is used in this mode. Systems can be registered on the website for TrueDNS service: http://ns1.truecam.net. System will get a domain name of xxx.truecam.net style. Please, refer to user guide document for True DNS service.
- **DynDNS:** DynDNS service is used in this mode. Refer www.dyndns.org for details. ID, Password and Domain name are needed when DynDNS is set.

- **Check IP Disable:** If “Check IP Disable” is selected, IP Server will skip checking its own IP. In Fixed IP mode, the set IP will be registered on the DDNS server. In DHCP mode, the Allotted IP will be registered on DDNS server.

❑ **Bitrate Cor**

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  - **F** clients with limited b
  - **S** ed.

❑ **Address In**

The f

- **IP Ad** e server’s IP mode is set

- **Domain Name:** In case the server is registered with a DDNS server, the registered domain name is displayed.
- **MAC Address:** Display the MAC address of the server. In case the server is registered with a DDNS server, the MAC address is used for DDNS registration.
- **Connecting:** Client IP Addresses that are currently connected to system are listed.
- (1) Indicates Primary streaming and (0) indicates Secondary streaming

5. Serial Port Configuration

❑ **Serial Port Type and Configuration**

- **Serial Port type:** There are two serial ports, RS-232, RS-422/485 in ANT-4000E. Select RS-422 or RS-485 in RS-422/485 port
- **Serial Port Configuration:** The serial ports can be configured as follows.

  Each of the serial ports configurations must be same as the connecting device.

Mode	Selection
Bitrate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Data Bits	5, 6, 7, 8 bits
Parity	NONE, EVEN, ODD bit
Stop Bit	1, 2 bit

❑ **PTZ**

- **PTZ Type:** Select the type of PTZ camera or receiver.
- **PTZ ID:** Since it is possible to control multiple PTZ cameras or receivers over a single control line, each camera or receiver will be assigned with a unique ID. Enter PTZ ID of a camera or receiver for control. The ID value range can be between 0 and 255.
- **PTZ Port:** Select the serial port used for the PTZ camera control.
- **Direct Keyboard Control:** Keyboard controller can be connected to ANT-4000E directly to control pan tilt zoom and focus

❑ **Sensor Type**

There are two sensor input ports on ANT-4000E. Each of the sensor ports can be configured to the following.

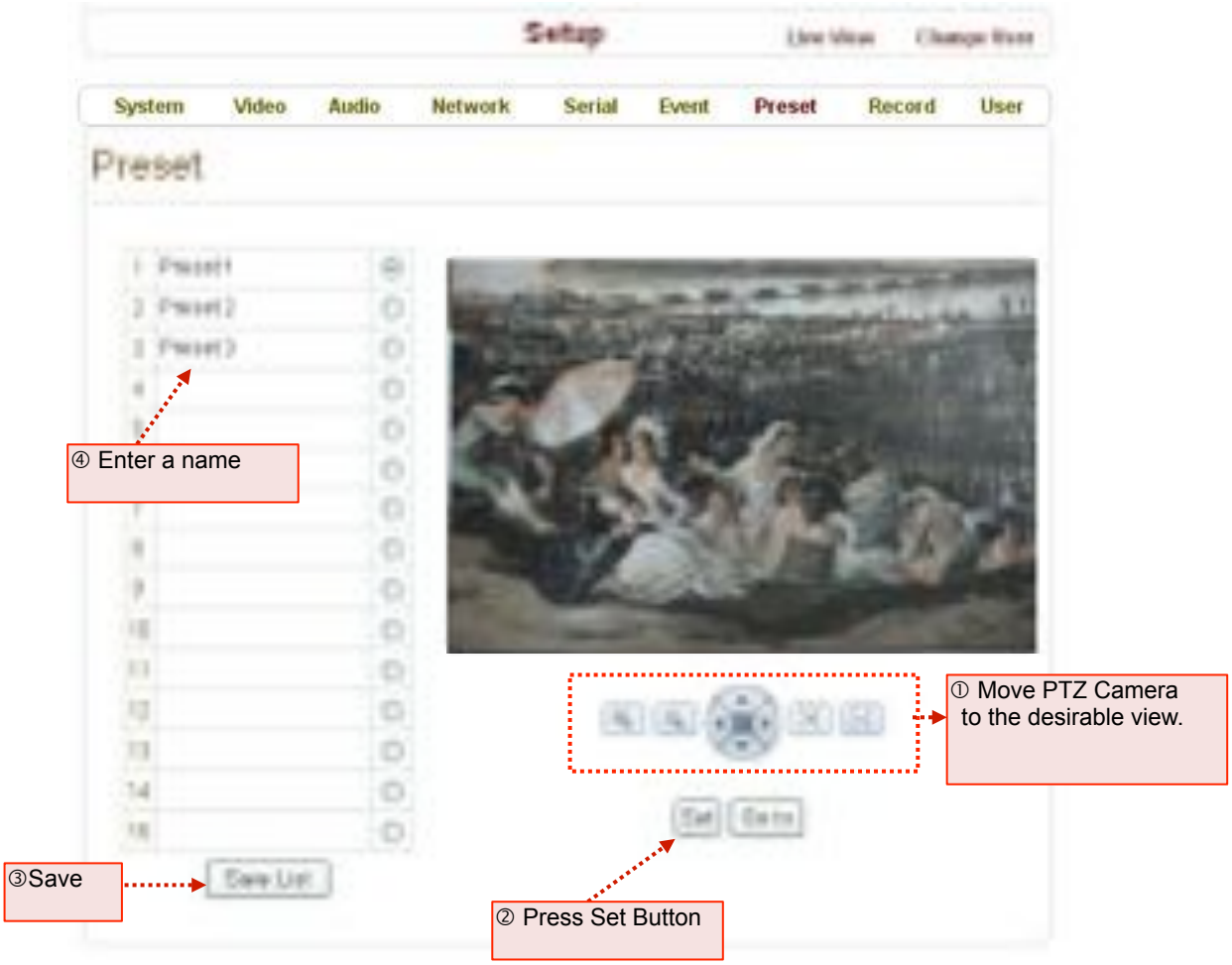
Function	Operation
OFF	Not used
NO (Normally Open)	The port is normally open and activated when closed.
NC (Normally Closed)	The port is normally closed and activated when opened.

The function of the sensor port is set based on the type of the sensor connected.

❑ **Sensor Schedule**

Each sensor port can be enabled or disabled by a day (of week) and hour unit. Sensor is disabled with a grey-colored block.

6. Event Configuration



❑ **Local & Remote Event Configuration**

- The event configuration configures the actions for each event type. **Local** section configures the actions for events from local (self) system, and the configuration activates local devices. **Remote** sections configure the actions for events from remote (peer) system.
- The following table lists the possible actions for events.

Action	Description
Beep	Outputs a beep sound using the buzzer in the

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- t for a single
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❑ **Alarm**

- inuous, it will

❑ **E-mail**

- t action.
- **peration**. If a

different port is configured in the SMTP server, this port needs to be changed accordingly).

- **Sender Address**: Enter an account registered in the SMTP server.
- **ID & password:** When the server requires authentication, ID and Password of an E-mail account need to be entered.
- **Destination address**: Enter Destination address. More than one address can be entered by delimiting comma (,) or semi-colon (;). Destination address can take up to 63 characters.
- **Video Clip Attaching:** A video clip stored at the moment of the event can be attached as an AVI or JPEG file format. If using dual Encoding, Primary video or Secondary video (H.264 only) can be selected.
- **Number of Frame**: Enter frame number of JPEG Capture (from 1 to 10)

❑ FTP Upload

Specify the settings to upload event information, when FTP is selected as an event action.

- **Server Address:** Enter an address of an FTP server to receive video files
- **Port:** Specify a port for FTP operation (**Port 21 is the default port in FTP operation.** If a different port is configured in the FTP server, this port needs to be changed accordingly.).
- **ID & password**: Enter ID and Password for accessing the FTP server.
- **Upload video:** Primary video and Secondary video (H.264 only), JPEG can be selected as an upload method.
- **Continuous upload:** Continuous upload “on” allows the video image to be transmitted regularly, regardless of occurrence of events.
- **Number of Frame**: Enter frame number of JPEG Capture (from 1 to 10)
- **Upload duration**: Specify recording duration of a video clip to be transmitted.
- **Upload interval**: Specify transmission interval.

  Recording duration is not included in transmission interval. For example, if upload interval is 60 seconds and upload duration is 20 seconds, a video clip for 20 seconds is transmitted every 80 seconds.

❑ Event Record

Specify duration of recording video generated by events to send through e-mail or upload

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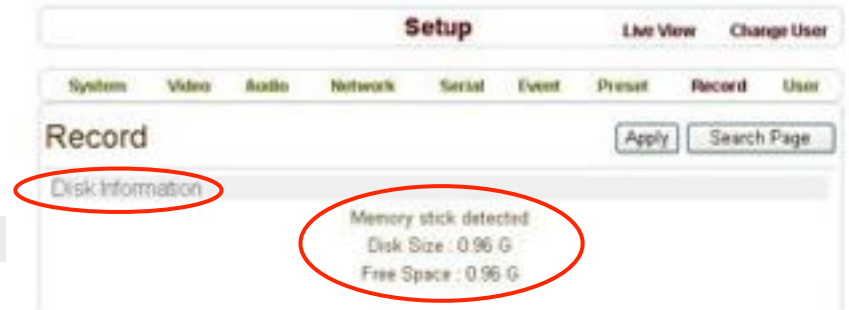


Configure up to 15 preset positions. Preset function is not available on some PTZ receivers. Make sure to check if a PTZ receiver supports preset

❑ **Preset Configuration**

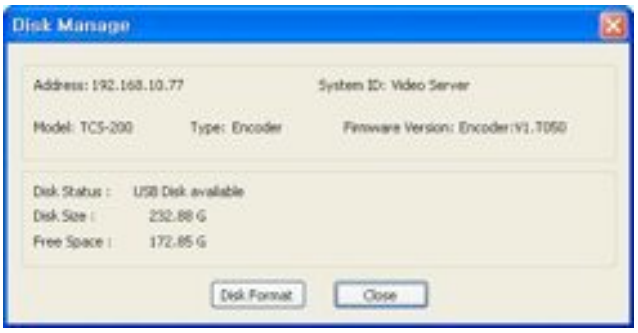
- Set the PTZ Presets by following the next steps

  ① Move cameras to desired view using PTZ control buttons.
  ② Enter Preset name.
  ③ Press **Set** button.
  ④ Once all the presets are set, press **Save List** button.

- **Move to Preset Position**

  Select a preset from the Preset and press **Go To** button, the camera will move to the selected preset position.

8.Recording Configuration



USB Device

USB hard disk or a memory stick can be used, and at least 1GB size is recommended.

Either EXT3 or FAT32 file system can be used. A disk with either EXT3 or FAT32 file system can be read in a Linux PC. However, only a memory stick with FAT32 file system can be read in a Windows PC. In

case of formatting through True Manager, the disk is formatted as EXT3. The File system can be unstable and easily broken if you format the disk in FAT32 on Windows PC.

* Recording features has been added from 102D_001 firmware version.

* Less than 4Mbps of video bit rate is recommend when you record and monitor video at the same time since it may cause frame loss.

Disk information and recording setup

Be sure to restart the system after connecting a USB disk. During booting, the system reads status of disk and initializes it. Once the initialization of a disk is finished, the status of disk is shown on **Record** page of web-based setup.

❑ **Disk Information**

- The status of a disk can be checked from the **Disk Manage** menu of True Manager as well.

Refer to the chart for checking the status of disk.

Disk status	Description
Disk error detected	Error
No disk	Disk is not connected to the system.

Searching Disk information	Checking the status of disk. Refresh the page and wait until the status is changed.
Mounting and Recovering Disk...	Performing recovery process when disk damage is found. It takes from seconds to minutes for recovering.
Disk format needed	Disk is attached, but the type of the file system is unknown or damaged.
Unknown disk type detected	
USB Disk available - (format is recommanded)	Disk is available, but formatting is recommended.
USB Disk available	Available to be used for recording
Disk formatting – Start	Disk is being formatted. System should not be turned off during formatting.
Disk formatting – Progressing……	
Disk formatting – Writing inode tables 63/619	
Disk formatting – Creating journal……	
Disk formatting – Writing Superblocks……	
Disk format done, Please wait for reboot.	
Disk removed or in abnormal state	Disk is detached during operation or there is damage on the file system. If it happens while disk is connected, it is recommended to format the disk.

❑ **General**

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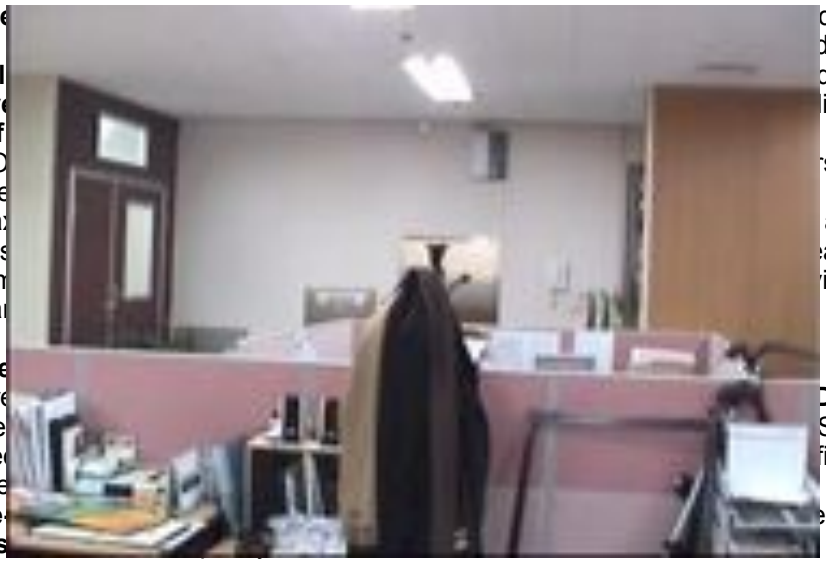

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isk is full. If **Overwrite** free space in the disk.
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a small file size is set, eased. If recording time ious file size is smaller

❑ **Event Type**

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  type
- **Pre**
- **Pos**

Disconnect. In case of Selected event type is figured and each event
ens.

❑ **Schedule Table**

- Actual recording mode is determined by **Schedule Table**, where recording mode configured by day

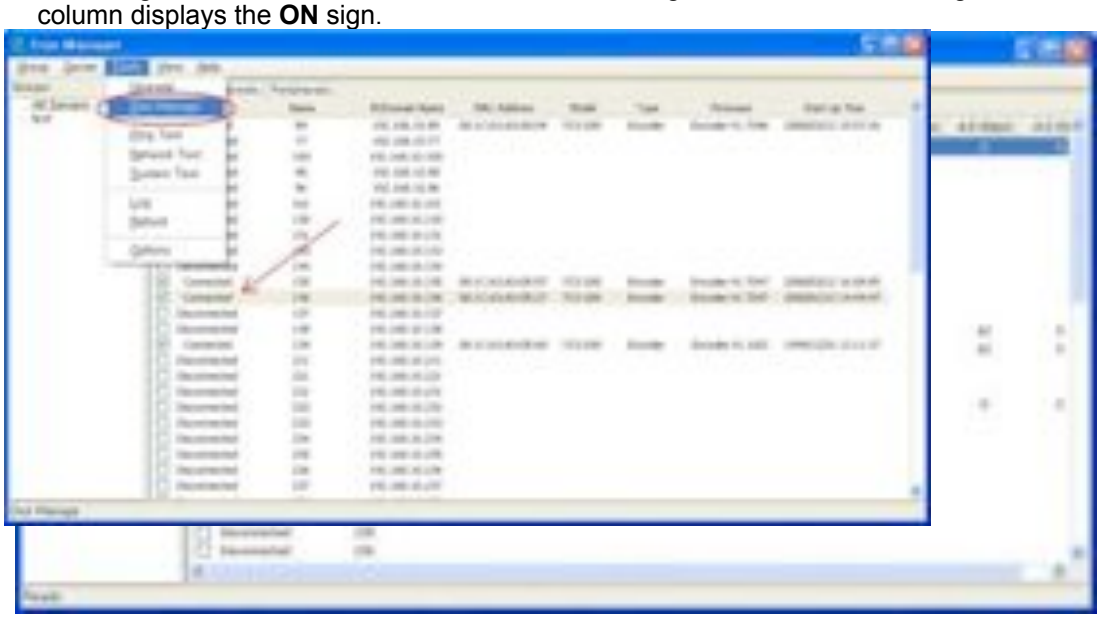
(of a week) and time.

- Each of recording mode configures the recording operation as follows:
  - **Record off** : No recording
  - **Continuous** : Records continuously
  - **Disconnect**: Data is recorded when the system loses the connection to its client(Decoder, VMS/NVR) etc. When one of its multiple clients system is disconnected, this doesn't happen.
  - **Event Type**: Records when an event configured in **Event Type** setting happens.

Checking status of recording

- Recording status can be shown on the main view page.

- Recording status can be also shown in True Manager. When data is being recorded, **Record** column displays the **ON** sign.



Search and Playback

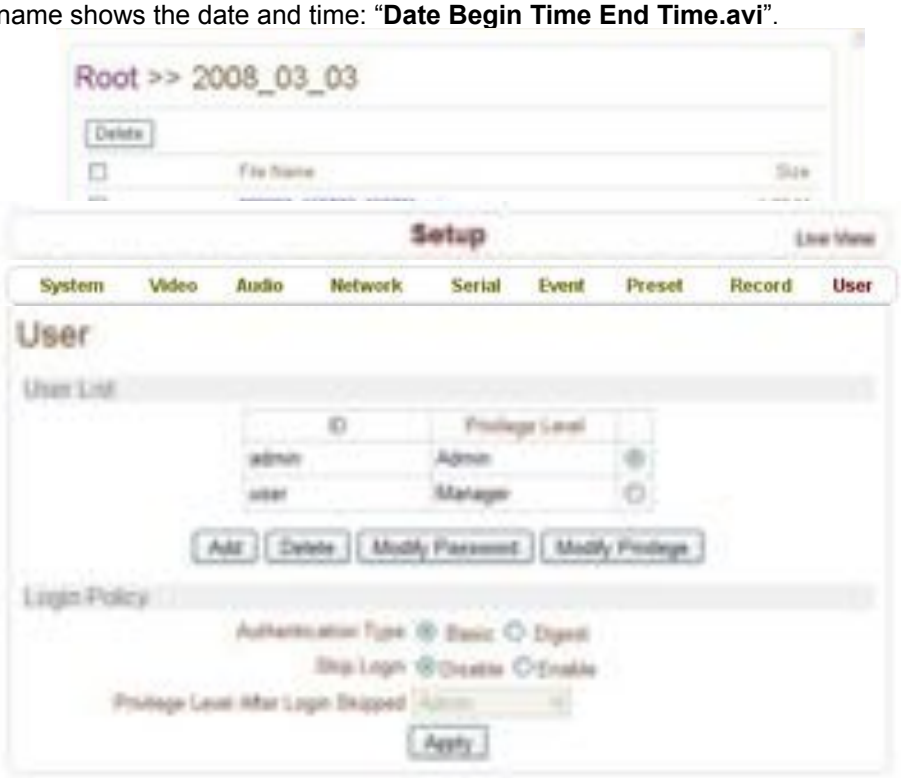
❑ **Recorded File**

- Recorded video and audio data can be saved as AVI format on the disk.
- In general, one AVI file is created for an event in case of event-based recording. However, it is possible that recorded data, caused by series of events happening quickly and continuously, may be merged to a single AVI file. (depending on pre/post event time settings.) The size of file is limited to 10 ~ 200MB or 10 minutes.
- In case of continuous recording, AVI files are created in series and the size of each is limited to 10 ~ 200MB or 10 minutes.

❑ **Search**

- A file currently being recorded doesn't appear until it is completed. In case of Continuous recording, a file will be shown after 10 minutes from the start of recording, for a file is generated every 10 minutes.
- Press **Search Page** button on the **Record** setup page. Dates with recording data will be shown as follows.

- First, choose the date to be searched and the list of AVI files will be shown.
- The file name shows the date and time: "**Date Begin Time End Time.avi**".

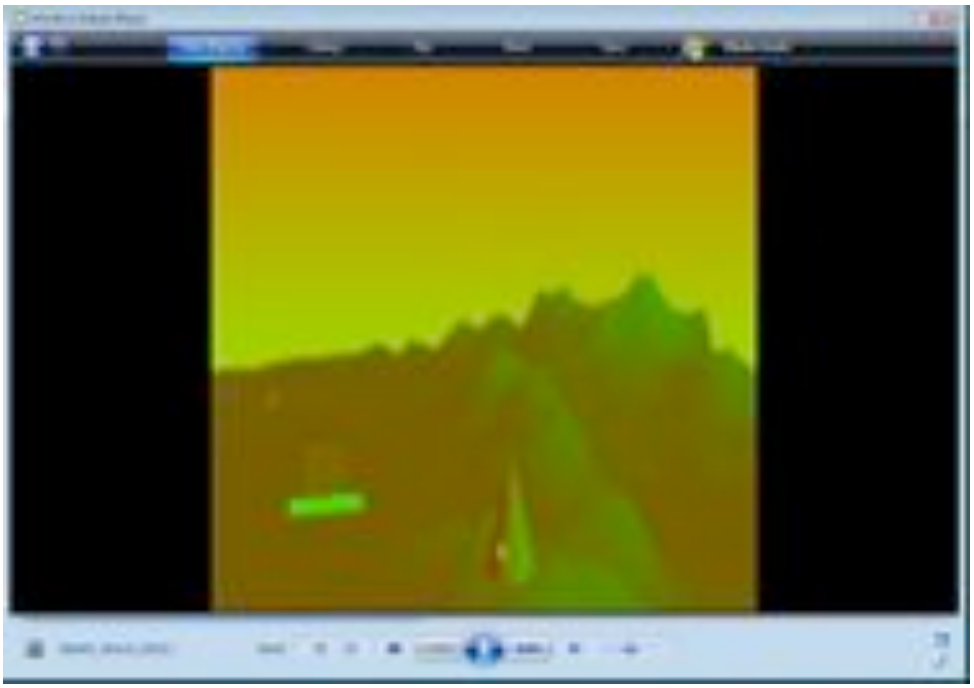


- Press **R**

❑ **Playback**

- Selectin

- Pressing the **Save** button, the file will be stored in the PC. The AVI file can be played with Windows Media Player.



- If you press **Open** in the dialog, the file will be downloaded and played automatically with Media Player.
- Another connection through the web is disabled during downloading and it is also not possible to download two AVI files at the same time.

❑ **Deletion**

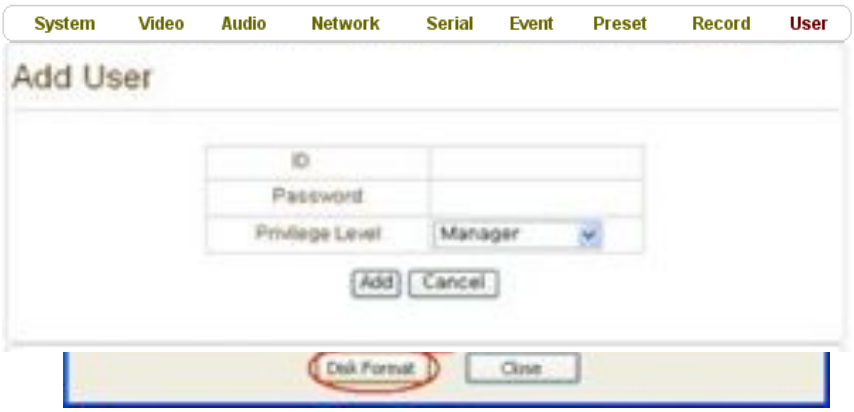
- If you want to delete recorded files, select the files by checking the item in front of each file and press the **Delete** button.

- It is possible to delete multiple files at once.

Formatting Disk

- True Manager is used to format a disk which is connected to the system.
- After connecting True Manager to a system, choose **Disk Manage** on the **Tools** menu.

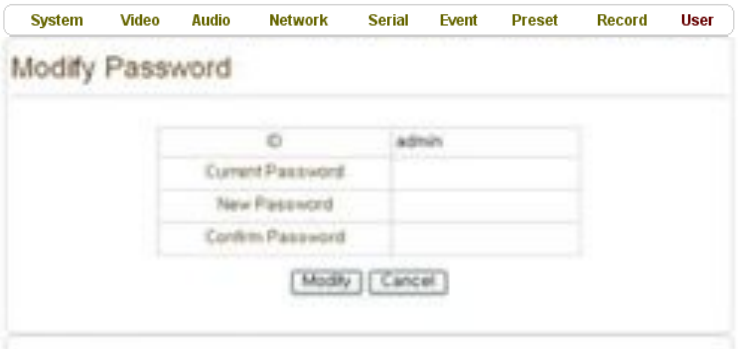
- Check the status of the disk in the dialog and press **Disk Format** to format the disk.



- During formatting a disk, the progress will update on the **Disk Status** item. The system may be rebooted depending on the situation. Once **USB Disk available** is displayed, it means that formatting is completed successfully.
- Once formatting is started, it is not possible to cancel this. Even if you close the **Disk Manage** dialog, formatting will continue.

Trouble Shooting

- There may be a damaged file system if you turn off the power of the ANT-4000E or disconnect the USB memory s
- In case of FAT3 ed. If this happens, the disk or memory
- In case of EXT itself. The recovery is executed at init very is in progress.



9.U

❑ **User List**

- User ied. User configuration is allowe ch user can have one of four privileges.

Privilege	Allowed Operations	Remarks
Admin	All operations	User id = admin
Manager	All operations except for user configuration	
User	Live viewing and PTZ control	
Guest	Live viewing only	

- **Add User**

  The Page for adding a user appears on pressing the Add button

  User ID and password need to be entered and privilege level needs to be selected.

  User ID and password consists of alphanumeric string of max 15 characters.

- **Delete User**

  A user is deleted by pressing Delete button.

- **Change Password**

  Pressing **Modify Password** button after selecting a user shows a page for changing password.

- **M**

  F shows a page for changing the p min user.

❑ **Login I**

- **A**

  For t

  H cation: Basic and Digest Access A

- **S** en authentication is not required. V e privilege level after login in this v **in Skipp**

Decoder Configuration

Decoder Configuration

Decoder Configuration is slightly different from Encoder Configuration. Different configurations from the encoder will be explained in this Decoder Configuration section

1. System Configuration

By setting System Mode to Decoder in System configuration, the system will reboot and start to work as a Decoder.

2. Video Configuration

❑ **Output**

F NT-4000E can c

- N
- PAL (720 x 576)
- 720p60 (1280x720)
- 1080p60 (1920 x 1080)
- 720p50 (1280 x 720)
- 1080i50 (1920 x 1080)

❑ **Buffering**

- You can store a maximum 30 decoded frames temporarily by using buffering before displaying the frames. Displaying stored frames is smoother than displaying in real time. However, displaying stored frames causes delay because of process of buffering.

Network page of Decoder has a section for specifying the remote system to connect to.

❑ **Remote Type**

- Normal : Connection for ANTRICA Encoder and decoder

- RTSP/RTP: Decoder system can make connection though RTSP protocol and get the stream via RTP. It is also possible to make connection with other vendor's H.264 IP camera supporting standard RTSP/RTP and standard H.264 algorithm.
- To make an RTSP connection, set *Remote Type* to "RTSP", enter the RTSP URL of remote system to *Remote Address,* and RTSP access port number to *Remote Port*. Currently it supports only video.

❑ Media Protocol

- Select protocol used for transmission of audio and video data between remote system and decoder. The decoder system or VMS can choose media protocols among TCP, UDP and Multicast.

❑ Remote Address

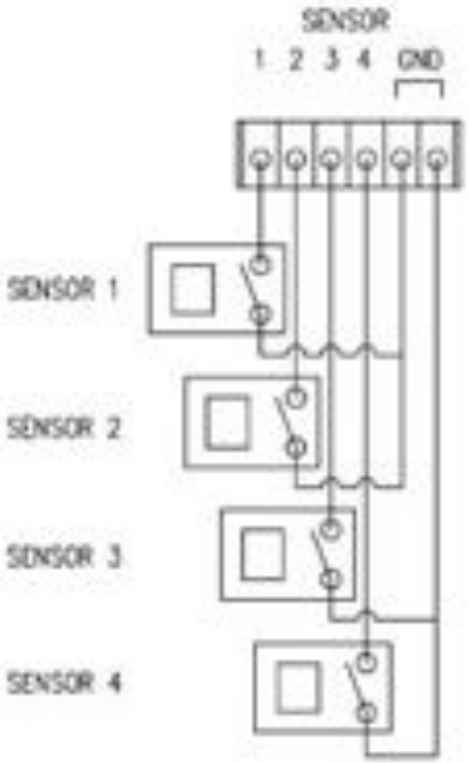
- Address of the rem

❑ Port

- Port of the remote

❑ Remote Channel

- The channel can b ple video channels

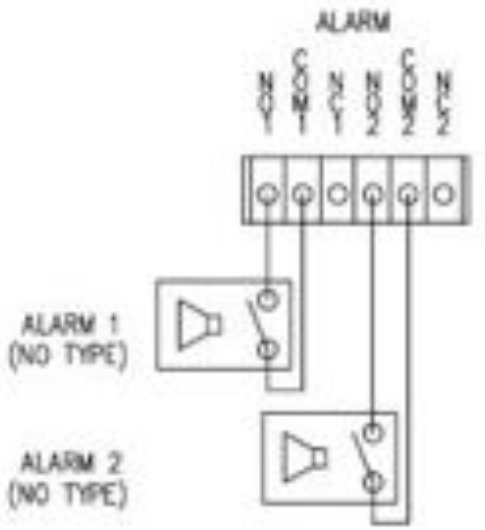


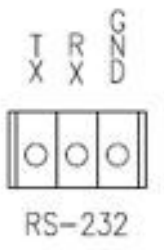
❑ Use Streaming Server

- Decoder system has settings to connect to the Encoder or IP Camera via the Streaming

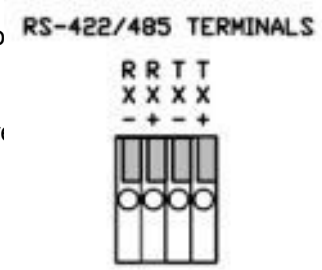
Server. To connect to Encoder or IP Camera via Streaming Server, **Use Streaming Server** should be set to **On** and information about the **Streaming Server (SS)** needs to be configured appropriately.

- **SS IP address**: IP address of Streaming server
- **SS port:** Enter Port number that is set when registering Streaming server.
- **SS ID:** Enter Streaming Server ID.
- **SS password:** Enter Streaming Server Password.





❑ **Disconnection**

- Decoder system's output mo  ın be configured
  - Freeze : Video image of n there is a disconnection.
  - Black Screen: Black Scr a disconnection.

❑ **LED**

- Select from Video, Audio ar… Data LED. When you have selected data (Video or Audio or Serial) communication between the encoder and the decoder, the Data LED will indicate the status.

Appendix

1. Appendix A : Sensor and Alarm Port

❑ **Sensor Port**

- **Terminal Type**

- Voltage Rating: 150VAC
- Current Rating : 2A
- Color : Red

- **Sensor Signal Input Type**

  - NO Contact Signals

- **Connection to External Device**

❑ **Alarm Port**

- **Terminal Type**

- Voltage Rating: 150VAC
- Current Rating : 2A

- **Relay Type**

- Contact Rating : 1A 30VDC
- Switching Power : Max 30W 62.5VA
- Switching Voltage : Max 60VDC

- **Alarm Signal Output Type**

- NO/NC Contact Signals

- **Connection to External Device**

2. Appendix B : Serial Port

❑ **RS-232 Port**

- **Port Type**

-3 PIN

-Pin Arrangement

-Pin Description

Pin NO	Pin Name	Description
1	TX	RS232 TX(Transmit)
2	RX	RS232 RX(Receive)
3	GND	Ground

❑ **RS-422/485 Port**

- **Port Type**

-4 PIN

-Pin Diagram

-Pin Description

Pin No.	Pin Name	Description
1	RX-	RS422 RX-
2	RX+	RS422 RX+
3	TX-	RS422 TX- or RS485 TRX- selectable by S/W Setup
4	TX+	RS422 TX+ or RS485 TRX+ selectable by S/W Setup